THE TRUTH ABOUT

VACCINATION & SMALLPOX.

BY

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The Author of a letter to *The Times* of May 11th on "Vaccination and Smallpox," having been led to believe that it might be usefully reprinted for general distribution, has endeavoured to render it more complete by such additions as might put the facts of the case in a stronger light, without interfering with that simple "common-sense" view of it, which to himself has always seemed the most satisfactory, and which he finds to have been most convincing to others. Those who may desire to go into the question (especially the last head of it) in more detail, can scarcely do better than procure the Report on the subject made by Dr. Iliff (Medical Officer of Health) to the Vestry of St. Mary, Newington, 1878-9.

WILLIAM B. CARPENTER.

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THE TRUTH ABOUT VACCINATION AND SMALLPOX.

The mind of the public is evidently so much unsettled as to the "protective" influence of Vaccination, that I venture to think it may not be indisposed to listen to what can be said on the question by one who has watched its course for more than half a century, with scientific as well as philanthropic interest, and who claims as complete a freedom from Professional prejudice as any outsider;—his sympathies in this matter being, not with the "doctors," but with the Public, whose welfare is with him, not the primary, but the *only* consideration.

It happened that my attention was specially directed to the subject at the very commencement of my Medical apprenticeship, in 1828, by the number of cases which then fell under my notice of *total and irremediable deprivation of sight* by Smallpox during the first months of infancy; my master, Mr. J. B. Estlin, of Bristol, having a widespread reputation in the West of England and South Wales as an ophthalmic surgeon. Strict inquiry being made in every case as to previous Vaccination, the reply was *invariably negative.* During the eight years of my attendance at Mr. Estlin's Eye-dispensary, I must have seen at least a hundred such cases (I well remember reckoning the average at more than one a month); not one of these occurred after Vaccination, and in no case had the Smallpox been communicated by Inoculation, which, at the time I speak of, had fallen into general disrepute,—being performed only by a few old-fashioned country practitioners.

A dialogue of this kind would take place between Mr. Estlin and the poor blinded infant's mother:—"How did this child come to have the Smallpox?" "*Catched it natural, sir.*" "Was the child never vaccinated?" "No sir." "Why not?" "Because his (or her) elder sister (or brother) was vaccinated, and had sore ears afterwards."—Now sore ears are so extremely common among children brought up in poverty and dirt, that to attribute them to Vaccination is just as rational as it would be to charge it upon Vaccination that a child afterwards died in a teething-fit; yet it is a common habit, not only of uneducated persons, but of many who ought to judge better, to regard Vaccination as the *cause* of *any* children's malady that may chance to *follow* it.

It was impossible for me, therefore, to be otherwise than strongly impressed with its "protective" agency; and I took an active part, both while I remained a pupil, and during the few years in which I practised my profession, in diffusing *without fee or reward* what I regarded as its unquestionable benefits. That these benefits have been latterly called in question, is due (as it seems to me) to three causes;—*first*, the entire ignorance of the present generation, save the few who have specially studied the medical history of the last two centuries, as to the ravages of Smallpox before the introduction of Vaccination by Jenner at the beginning of the present; *second*, the exaggerated claim to complete "protection" by a single Vaccination, originally advanced by its advocates; and *third*, the strangely illogical idea by which the Anti-vaccinationists of the present time are possessed, that what is not complete "protection" is no protection at all.—To each of these points, therefore, I address myself.

1. There can be no question that almost every individual born into the world inherits a liability to be, once in his or her life, the subject of certain diseases known in medicine as the Exanthemata—Measles, Scarlatina, and Whooping-cough; the cases being very rare in which persons exposed to the infection of these diseases during early life, escape being attacked by them. This is shown in the most remarkable way, when the infection of any one of them is conveyed to a community among which there are few or no persons who are "protected" by having previously been its subjects. It will be in the recollection of many of your readers, that the Fiji Islands were thus ravaged by Measles not many years ago. And it is within my own knowledge that the population of the Faroe Islands, old and young, were similarly affected some years further back; scarcely any escaping, save a few old people who had suffered in an epidemic 65 years previously, and the inhabitants of Suderoe, who kept themselves in a rigid quarantine.—That Smallpox belongs to this group of diseases, and that the inherited liability to it is at least as great as it is to measles, are amply proved by medical records of the past two centuries. It was then described as *the most generally diffused, the most frequently epidemic, and the most fatal, of all known pestilences*. When once introduced into any locality, it usually spread among all its inhabitants who were not "protected" by having previously passed through it; and thus, when it was carried to a new country, or a long interval had elapsed since a previous visitation, almost every one suffered from it. When introduced from Europe into Mexico in 1527, it first ravaged that country, and thence spread with fearful virulence throughout the American Continent. And the like introduction of Smallpox in the last and present centuries among the inhabitants of the Pacific Islands, has largely contributed to that reduction of their population, which has been almost

everywhere the consequence of their intercourse with Europeans. One of my sons, who has lately visited the Sandwich Islands, was informed by the chief medical practitioner there, that this reduction of the native population is still going on; the large mortality from Smallpox (which is just now raging there) being clearly attributable to their neglect of Vaccination, as the disease but very slightly affects the European and American settlers who enjoy its protection.—The visitation of Smallpox which Iceland sustained in 1707, is peculiarly instructive. The disease was introduced in that instance by the clothes of an Icelandic sailor who had died of Smallpox abroad; for these having been sent home to his family, his sister wore one of his shirts, sickened of Smallpox, and died; and from her it passed to others. As thirty-four years had elapsed since the last epidemic of Smallpox in Iceland, only a small proportion of the entire population was "protected" by having already gone through the disease; and it spread so rapidly through the "unprotected" in spite of their scattered distribution, that in six months at least 14,000 persons, constituting *one-fourth* (some accounts say as many as *one-third*) of the total inhabitants of the island, were carried off by it. Not only does almost every one of the "unprotected" appear to have taken the disease, but many elderly persons who had previously had it in the former epidemic, took it afresh. So many of the male population were struck down at once, that (it is recorded) women had sometimes to carry the corpses to the church-yards; and the bishop was obliged to saddle his own horse.

That no Epidemics of similar severity occurred at this period in this country or on the Continent, is plainly due to the fact, that, as Smallpox was never absent, a great part of the adult population was "protected" by having already had the disease. As there was then no accurate Registration of Deaths, it is impossible to speak with certainty as to the number which were due to Smallpox; but the medical writers of the early part of the last century estimated their average annual proportion at about 8 in every 100 deaths; whilst of all the children who died under 10 years of age, it was stated that *one-half* were carried off by Smallpox.

Whilst it is *now* the exception, among the middle and higher classes, to hear of a case of Smallpox in the persons or families of one's friends or even wider acquaintance, it was *formerly* exceptional for any one, in whatever rank of life, to attain middle-age without having been the subject of its attack; "seaming" and "pitting" of the face were then so common, that it was estimated that one out of every three persons met in the street showed traces of it; for a "professional beauty" to have her face disfigured by smallpox, was an incident often introduced into the novels and tales of "the period;" and loss of sight by that disease was so frequent, that at least one-third of the

inmates of Blind Asylums, even within my own time, owed their privation to it.

The fatality of the disease, and the universality of liability to it, were so generally recognised at that time, as to constitute the justification for the artificial spread of it by Inoculation. This practice, which seems to have prevailed for many centuries previously in some Eastern countries, was introduced into England in 1720 by Lady Mary Wortley Montagu, the wife of the English Ambassador to Turkey; the object of it being to communicate the disease at an early age, in its mildest form, and under the most favourable circumstances, to those who (it was considered) were sure to take it at one time or another. It soon became general in England, and was common throughout the remainder of the last century; it was kept up (as I have already mentioned) by a few doctors of the old school, even within my own remembrance; but it was made illegal by Act of Parliament in the year 1840. There is clear evidence that, when practised with due precaution, it reduced the *per centage* mortality from Smallpox; that is, out of every 100 persons to whom the disease was thus communicated, a smaller proportion died, than among 100 who took Smallpox in the natural way. This was in a great measure due to the fact which careful observation has now fully established,—that, under favourable circumstances, Smallpox is less fatal in children than in adults. But as Smallpox was thus given to many who might otherwise have escaped, and was constantly kept up, instead of only appearing epidemically from time to time, the *total number* of persons who died annually of Smallpox seems to have been rather increased than diminished by the practice. Notwithstanding the "protection" thus obtained, epidemic visitations of Smallpox still recurred; and with such severity, that a hundred years ago the Smallpox mortality of London alone, with its then population of *under a million*, was often greater in six months, than that of the *twenty-five millions* in England and Wales is now in any one year.

The *average* Smallpox mortality of this country during the latter part of the last century, is estimated (on the best data procurable) at about 3,000 per million living. How much of this was chargeable upon Inoculation, and would therefore have disappeared with the discontinuance of that practice, it is impossible now to say. We can only judge by general testimony, not only of the Medical but of other writers of that time, that Inoculation was *on the whole* beneficial. And if we were to admit for the sake of argument that this average mortality of 3,000 per million living, was *double* what it would have been without Inoculation (an admission scarcely possible to those who know what Smallpox was *before* Inoculation), we shall presently see what an enormous reduction has since taken place, which can be attributed to nothing else than Vaccination.

The question then is,—How is it that, as Smallpox from time to time shows itself in our midst, it does not *now* spread, not only as it did in this country in the latter part of the last century, but as it did in uninoculated Iceland near its beginning? Just now, in nearly *four millions* of our Metropolitan area, the weekly number of deaths from Smallpox is numbered by *tens*. The proportion of that population which is "protected" by a previous attack of Smallpox, being certainly *not greater* (probably a good deal less) than that of the Icelandic population in 1707, how is it that the disease does not now spread among our closely-packed masses, as it did among the scattered Icelanders; and kill off weekly not only its *hundreds*, but its *thousands*, and even *tens of thousands*?

The answer is certainly *not* to be found in any diminution in the severity of the disease; for the recent returns of the Asylums Board Hospitals show that the proportion of *deaths* among the *un*vaccinated who are attacked with Smallpox (chiefly adults) reaches the fearfully high rate of 44 in 100; and this under the most improved Medical treatment, and with the advantage of well-aired Hospitals and excellent nursing. Nor is it to be found in that general improvement in the Sanitary condition of our great towns, which is reducing the mortality from Typhus and other fevers. For all experience shows that this has as little effect upon the spread of Smallpox, as it has upon that of Scarlatina;* the poison of which, diffused by personal contagion, affects alike the well-to-do and the poor, the dwellers in comfortable middle-class houses, the "great unwashed" of the back slums of our towns, and the inhabitants of the overcrowded cottages of our country districts.

A sudden outbreak of Scarlatina, fortunately of a very mild type, occurred a few years ago, in a number of families in the upper ranks of London Society. These families resided in such different parts of the West End, that the diffusion of the Scarlatina poison from any common source (as, for example, the Milk-supply, by which Diphtheria and Typhoid fever are known to have been spread) seemed out of the question. It gradually came out, however, that all the persons first attacked had met two or three days previously, at a large party; and this clearly pointed to the host's house as the *focus* of the infection. The very able Medical Inspector who was directed to enquire into this case, was at first quite unable to discover its source; but being convinced that some source *must* have existed, he at last found it out. All the guests affected by the Scarlatina-poison, had partaken of some cream brought to the house by a boy who had stopped in the street to talk with another boy just recovering from an attack of the disease.

I can add two instances known to myself, in which the poison of Scarlatina was conveyed after an interval of *several months*;—in the one case by the clothes of a lady who came as teacher in a ladies' school, having previously been governess in a family in which there had been Scarlatina, but who had left that family three months before, and was supposed to have been purified by a residence at the sea-side;—in the

* In 1875, the number of deaths from this disease in England and Wales *exceeded twenty thousand;* whilst the total number of deaths from Smallpox in the same year was *under one thousand.*

other by the clothes of a doll, which, having been played with by children recovering from Scarlatina, was some months afterwards sent to a neighbour's house for the amusement of a girl-visitor.

With my present knowledge I am inclined to believe that the occurrence of three cases of Scarlatina, at intervals of *several years*, in a particular room of a house in Bristol occupied in succession by three families,—a member of each, who slept in the "archway" room, being attacked with Scarlatina,—was more than the coincidence we then supposed.

Now, that *Smallpox* is similarly communicable, wherever there are "unprotected" ready to be affected by its poison, cannot be doubted by any one who traces the history of any outbreak of it; the Icelandic epidemic (p. 5) being a most marked example; whilst the following is another :—

When the old Smallpox Hospital at King's Cross was pulled down, to make way for the Great Northern Railway Station, Smallpox suddenly broke out in many different parts of the Metropolitan area. It occurred to a very able Surgeon whose attention happened to be drawn to the circumstance, that this outbreak might not improbably be due to the scattering of the wood-work of the Hospital, which had been cut up and sold as fire-wood. And the enquiries which he set on foot soon satisfied him that such was the case. That the Epidemic thus started at so many points did not prevail more extensively, can only be accounted for by the fact that at this time the greater part of the population was protected by Vaccination.

No one residing in any locality in which Smallpox is prevalent, can feel the least security against being in some way or other exposed to its contagion; and to say that the disease does not now spread as formerly, because of our improved Sanitary condition, is to run counter to all experience. Only a few weeks since, a young lady travelling by one of the suburban Railways noticed a very offensive smell in the carriage she had entered, and traced this to the person of a man who was sitting wrapped up in blankets. Within two days of her return home she was attacked with Smallpox, and in a few days more she was dead.

This is what, if the doctrine were true that Vaccination affords no protection against Smallpox, would happen to almost anyone accidentally exposed to its contagion, if not "protected" against its effects by having previously had the disease. Yet we shall presently see that Nurses and Attendants in Smallpox Hospitals, *who are constantly exposed to that contagion in its severest form*, and who have never had the disease, are *completely proof against it*, if properly protected by Vaccination.

2. Vaccination was first introduced at the end of the last century by Dr. Jenner, who, practising as a medical man in the country district of Berkeley in Gloucestershire, learned that Cows occasionally suffered from a mild eruptive disease which was sometimes taken by their milkers, and that the persons who had contracted this Cowpox were reputed to be proof against Smallpox. This being confirmed by observations carried on through many years, he determined to try if the Cowpox could be communicated from one person to another, like Smallpox, by inoculation. Finding that this might be done, and that the persons to whom Cowpox had been thus artificially given by Vaccination seemed to have the same "protection" against Smallpox as those who had taken Cowpox direct from the cow, he made public his discovery,

which was soon widely adopted, though not without having to overcome considerable opposition.

In the first days of Vaccination it was affirmed, on the basis of a far too limited experience, that it afforded a *complete* protection against Smallpox. This claim, however, was early negatived by the occurrence of Smallpox in persons who had undoubtedly been successfully vaccinated; but it was remarked that the disease was unusually mild in its type, the mortality being small, and disfigurement and blindness rare. Hence the term "modified" Smallpox came into use, as the designation of the type of the disease which generally (it was maintained almost invariably) presented itself in vaccinated subjects. But in process of time the advocates of Vaccination were startled by the indisputable fact of the not rare occurrence of Smallpox in its worst form, among persons who had undoubtedly been thoroughly Cowpocked; and this, of course, was a severe blow to the believers in its efficacy. On careful inquiry, however, it proved that so large a proportion of such cases occurred among those who were approaching, or had already attained, adult age, that there was obvious ground for the belief that the "protective" effect of early Vaccination had died out. The practice of Re-vaccination was then introduced; and it was found that when performed on adults who had been vaccinated in early childhood, so considerable a proportion took the Cowpox a second time, as to indicate that its "protective" influence, whatever its nature, had expired.

I may be allowed to quote my own case as an instance. Having myself been successfully vaccinated in infancy, I was re-vaccinated at the age of 11 or 12, but did not then take the Cowpox a second time. But having accidentally scratched myself with a charged lancet about 12 years afterwards,—when engaged in propagating a new stock of "vaccine" obtained from cows at Berkeley,—a very characteristic vesicle developed itself. The "protection" which the want of success of my first Re-vaccination showed that I still enjoyed, had died out by the time I arrived at manhood; and I might have been attacked by Smallpox, when exposed, as I continually was, to its poison, but for the new protection which I unintentionally gave myself.

Facts of this kind all tended to show that the protection afforded by successful Vaccination is about the same as that given by a first attack of Smallpox. There can be no question that *second* attacks of Smallpox did now and then occur in old times, just as second attacks of measles, scarlatina, &c., do now; and this especially when the first attack occurred in infancy or early childhood, as in the historical case of Louis XV.—The Physiologist would predict, alike in regard to Cowpox and Smallpox, that, whatever be the constitutional effect left by the first attack, the original liability is much more likely to be reproduced during the period of growth,

when tissue-change is very active, than it is subsequently. And this obviously points to the importance of Re-vaccination at or about the termination of that period; and to the probability that the protection it affords will then endure through life.

How completely this scientific anticipation is borne out by experience, is proved by the immunity from Small-pox enjoyed by the Nurses and Attendants in Smallpox hospitals who have undergone Re-vaccination, although exposed to Smallpox infection in its most concentrated form.

Fifty years ago, Mr. Marson, the able superintendent of the old Smallpox hospital, insisted on the Re-vaccination of every new Nurse before her admission to serve in it. From that time *not one nurse* in that Institution has taken Smallpox.—The same *complete* freedom from the disease has been enjoyed by the 1,000 Re-vaccinated persons similarly employed of late years in the Asylums Board Hospitals; whilst half-a-dozen, who, by some mischance, were *not* re-vaccinated, but were in every other respect under the same circumstances with the rest, *all took Smallpox*. How many of these Nurses and Attendants (unprotected, as they were, by previous attacks of Smallpox) would be alive now, if they had not been protected by their double Vaccination? One of the six *not* re-vaccinated, being supposed to be "protected" by a previous attack of Smallpox, took the disease a second time, *and died.*

Again, out of about 15,000 Smallpox *patients* treated in the Asylums Board Hospitals in the severe epidemic of 1870-2, there were only *four* in which Re-vaccination had been successfully performed; and in these the disease was of the mildest type.—The like has been observed in the recent epidemic.

Many of the cases in which the "protection" of Vaccination fails, are clearly attributable to the inefficient performance of the operation. For Mr. Marson, during his forty-one years' experience at the old Smallpox Hospital, was able clearly to establish this fact,—that *the degree of "protection" is proportional to the thoroughness with which the Vaccine has taken effect.*

In his analysis of 5,000 cases admitted into the Hospital between 1836 and 1851, he showed that whilst 35 died out of every 100 unvaccinated, and 23½ out of every 100 in those who were stated to have been vaccinated but showed no mark, the proportion of deaths was under 8 per cent. in those who showed *one* mark, under 5 per cent. in those who showed *two* marks, under 2 per cent. in those who showed *three* marks, and only ½ per cent. in those who showed *four marks*.—The like difference showed itself in the mortality of 13,765 reputedly-vaccinated patients tabulated by the same gentleman in 1867; for of 11,172 of these, in whom the vaccination marks were very imperfect, 1,027 died, or at the rate of nearly *ten* per cent.; while out of 1,079 whose marks showed their vaccination to have been reasonably effective, only 21 died, or at the rate of almost exactly *two* per cent.; and out of 1,505, in whom the marks were up to the standard, only 13 died, or at the rate of less than *one* per cent.

The Anti-vaccinationists have to meet these most cogent

facts; which, to the scientific mind, carry the assured conviction that if it were possible to enforce, not only Vaccination in infancy, but Re-vaccination at the age of from 16 to 18,* Smallpox might be as completely exterminated from our islands as it has been from Malta; where my scientific visits to that island in 1870 and 1871 gave me the opportunity of inquiring from its Medical Authorities as to the effect of the compulsory vaccination long in force there. And it is to be remembered that this immunity cannot be attributed to the insular position of Malta; for it is, from its constant communication with every Mediterranean port, quite as liable as Great Britain to have the poison of infectious diseases brought in from without.—A friend who passed part of last winter at Gibraltar, was informed that it had long been similarly kept free from Smallpox; and was herself struck with the absence of pock-marked faces in its large and miscellaneous population. On visiting the Spanish town of St. Roque, only a few miles from the other side of the frontier, she was struck with the number of pock-marked persons in its streets, and found Smallpox then prevailing among its population.

I would commend to the special attention of Boards of Guardians throughout the country the following extract from a Letter recently addressed to the members of the Merthyr Board by Mr. G. T. Clark, on his retirement from the office of Chairman, after having held it for 22 years; in which he reviews the general results of his administration of this large and important Union, the population of which, in 1871, was 104,110.

"*Epidemic Diseases.*—Of these diseases the Compulsory Vaccination Act has enabled us to deal with *the most prevalent and the most deadly;* Smallpock. The reports of our Vaccine inspectors are returned weekly, and read to the Board, and the division of the Union into nine districts has enabled the vaccinators to reach and keep in view the case of every child vaccinated. The result of these arrangements has surpassed our utmost expectations. *Cases of Small-pock were wont to be frequent. It is now some years since a case has occurred in the Union;* and this improvement, it is evident, is wholly due to compulsory Vaccination."

Having happened, a few days ago, to ask the Resident Medical Officer of the Fever Hospital in a very large provincial town, whether he had many Smallpox patients under his care, he informed me that, so far as he knew, *there had not been a case of Smallpox in the place for several years;* the town being kept free from its visitation by the activity of the Head-Vaccinator, who did his best to leave no child unvaccinated. The stronghold of Smallpox at the present time is in the Metropolitan area; in which, through the continual change of abode

* The Belgian Academy of Medicine has recently urged this on the Belgian Government.

of a large number of families from one district to another, and through the difficulty hence arising of securing the Vaccination of every child born, a considerable number remain unvaccinated. It is thus *a simple matter of fact*, that, in places in which Vaccination has been *thoroughly* carried out, Smallpox does not show itself; whilst in London and other places in which many children remain unvaccinated, Smallpox constantly smoulders, breaking out from time to time like a half-extinguished conflagration.

That Smallpox still lingers among ourselves, is thus plainly owing (1) to the persistence of an unvaccinated residuum, many of whom are persons of mature age; and (2) to the existence among the vaccinated of a certain proportion, who (like those who in old times became the subjects of second attacks of Smallpox) have acquired a renewed liability, which Re-vaccination would destroy. No other explanation can be given of the fact that it now *chiefly* attacks, not—as formerly—young children, but those who are approaching or have already attained adult age. Thus of 173 Smallpox patients treated by Dr. Iliff in 1878, only 8 were under 2 years of age, and 41 between 2 and 10 years; while between 10 and 20 years there were 68, and between 20 and 40 no fewer than 51. All experience shows that, but for the protection of the young by Vaccination, the number of cases among children under five years old would have been far greater that of all the elder.—That it is the *unvaccinated residuum* which still serves as a stronghold to Smallpox, further appears from the fact, that of the total number of about 10,000 deaths in the Metropolis during the epidemic of 1870-2, *one-half* occurred among unvaccinated persons; notwithstanding that they do not form (so nearly as can be estimated) more than *one-twentieth* of the whole Metropolitan population.

It is triumphantly asked by the opponents of Vaccination, how it is that in these days of "compulsory vaccination," Smallpox, instead of being exterminated, is still prevailing with even increased severity; the epidemic of 1870-72 showing a total of 44,840 deaths in England and Wales, or at the average of nearly 15,000 per annum.

The reason why Smallpox has not yet been exterminated, has been already shown to be that a certain proportion of our infantile population still escape Vaccination, that a large number of adults are still living who have never been Vaccinated, and that the practice of Re-vaccination has not become general. But to affirm that Smallpox is now prevailing with *increased* severity, is simply an untruth. The mortality of even the *epidemic* years, in proportion to the increased population of the country, has never risen to *one-fourth* of what is believed to have been the *average* rate a century ago; being at the rate of about 700 per million living, as against 3,000 of the former estimate. And in the intervening years, the death-rate from Smallpox has fallen to so low a figure,

that when an *average* is taken of the annual rates of Smallpox mortality since the accurate Registration system was introduced in 1837, distinguishing into two series the years *before* and *after* 1854 when Vaccination was made compulsory, the fact is brought out that *compulsory vaccination has already diminished by more than one-half, the greatly reduced death-rate previously prevailing.**

We hear, it is true, a great deal more than we used to about the prevalence of Smallpox; but this is merely because public attention is now directed prominently to the subject, and the allegations of the opponents of Vaccination bring into prominence every fact that supports their views, —always ignoring the main question, "Why, if Vaccination affords no protection, does not Smallpox rage now as it did in old times among any population not protected by having been previously smallpoxed?" If the Vaccinated *nineteen-twentieths* of the Metropolitan population had suffered at the same rate as the Unvaccinated *one-twentieth*, the deaths among them, instead of being about 5,000, would have been 95,000. And those 5,000, as already shown, might have been prevented by Re-vaccination.

3. On the utterly illogical argument of the Anti-vaccinationists I need not waste many words. Suppose that Jenner had discovered that the eating some common wild herb, producing a slight temporary disorder (diarrhœa for example), by a temporary "poisoning" of the blood, would afford the same "protection" against an attack of Smallpox, as the having once had that disease,—say to the extent of 99 out of every 100,—what would be thought of the mental capacity of the man who should refuse to make his children eat of that herb, because it did not protect the 100th? Suppose, further, that it was found by experience that the protection given by such eating died out during childhood, and that it could not only be renewed, but made almost absolute, by the eating of the herb a second time at the age of 18; what should we think of the good sense of a young person, who should neglect, still more should refuse, thus to obtain immunity for himself, and at the same time to prevent his becoming a source of danger to others?

It is argued against Vaccination "Can disease produce health?" Most assuredly *Yes;* or else *all* Medical treatment is wrong. For the effect of every active dose of medicine is really a temporary disease; and the most potent medicines in

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* During the four years 1843-6 (inclusive) the deaths from Smallpox were not distinguished. But during the twelve years 1838-42 and 1847-53 (inclusive) the annual death-rate from Smallpox averaged 420 per million living. During the twenty-six years 1854-79 (inclusive) the death-rate from Smallpox has averaged only 208½ per million living.—I give these figures on the authority of Mr. Hodgson, of Brighton, who has been kind enough to supply them to me.

large doses are all poisons. The object of giving such medicine is to cure one disordered action by setting up for the time another which is corrective of it. But I shall now show how another most severe disease can be prevented by a *mild* one.

The attention of some of the most eminent Scientists (in this country and abroad) is now fixed on the study of various forms of most serious disease that extensively affect our Domesticated animals (sometimes spreading themselves to Man),* which it will be convenient to designate as "plagues." It has now been conclusively proved that the poisonous character of the germs of one of these plagues may be so tempered by "cultivation," as to produce, when introduced into the body by inoculation, a very mild form of the "plague," bearing very much the same relation to the severe as Cowpox does to Smallpox; and that an animal to which this mild form of the disease has been artificially communicated, is thereby "protected" against the severe.† Supposing now that this plague were spreading among our Sheep, as the Cattle-plague did among our Cows and Oxen not many years since; should we not say that the flock-master who does not avail himself of the means of protection which science has devised for the saving of his sheep, deserves to lose them; and that the real "cruelty" lies, not in him who subjects his sheep to a mild disease for the sake of saving them from a terrible pestilence, but on him who, by abstaining from doing this, leaves them "unprotected" from its ravages, and liable not only to infect other flocks, but also to communicate the disease to Man?

Let us now see, by a few marked instances, to which I would specially call the attention of Parents, what Vaccination does for the "protection" of Children.

Mr. Fry, of Maidstone, was called to attend a child of seven years old, who had a severe attack of confluent Smallpox, the disease being prevalent at the time in the town. She had *never been vaccinated*, and narrowly escaped with her life. *Six elder children, all of whom had been vaccinated by Mr. Fry*, were living at home; two of the sisters slept in

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* The "wool-sorters' disease" of Bradford, which is not only a very painful and severe malady, but is not unfrequently fatal, has been clearly shown to be communicated from sheep affected with "anthrax" to men who handle their wool.

† In the letters of the French Correspondent of the *Times* of June 3, will be found the account of the following remarkable experiment publicly performed a day or two previously by M. Pasteur, upon 50 sheep; of which 25 had been "protected" in the manner above specified, while the other 25 had not. They were *all* similarly inoculated with the *virus* of the most malignant form of this plague (known in France as "charbon"); and while *everyone of the "unprotected" died of it in a few hours, the whole of the "protected" escaped*, only one showing a slight indisposition which speedily passed off completely.—Similar experiments were made at the "Brown Institution" in London, more than a year ago, on a small number of animals; and their successful results have been communicated to the Royal Agricultural Society.

the same *room* with his patient, and one in the same *bed*, up to the time of his first seeing her; yet *neither of these girls* (one of whom had been vaccinated nine, and the other eleven years previously), *nor any others of the family, took the Smallpox.*

A more recent and equally striking case is recorded by Dr. A. J. Brett, of Bushey. Smallpox visited a family, nine in number, of which three had been vaccinated, and six not. *All these six took the disease, and four died, whilst the three who had been vaccinated escaped altogether.*

Dr. William Keith, of Aberdeen, was once called in to see a girl of eighteen (from the West Highlands) ill with the Smallpox. She had *never been vaccinated*, for her father affirmed that it was opposing the will of the Almighty to use means to avoid or escape disease; and *she was the last living of a family of ten, seven of whom had been cut off by Smallpox.*

Cases of this kind might be cited in any number.

To one objection I have now to refer, with the frank admission that there is a certain basis for it;—namely, that Skin-eruptions of various kinds not unfrequently appear after vaccination in children previously healthy; and that a severe Constitutional disease has been transmitted from children infected with it, to healthy children vaccinated from them.

Now, in regard to the first of these points, it is to be remarked that (as was distinctly stated by the medical writers of the last century, before inoculation was introduced) "rashes" are among the most common of disorders of children, whether vaccinated or not. But let it be granted that the slight feverishness incidental to Vaccination sometimes brings out a rash on a child that previously showed no sign of it:—what is this slight ailment, which usually soon subsides, to the horrible disease, so often producing blindness, disfigurement, and death, from which the child is protected? And if the rash does *not* speedily subside, it may be fairly attributed to a disordered condition that would have soon shown itself otherwise. Many a case could be narrated, in which a child whose Vaccination has been postponed through some accident, has become the subject of some severe (perhaps fatal) disease, which, if the Vaccination *had* been performed, would have been attributed to it.

That a severe Constitutional disease has been communicated by Vaccination to children previously free from it, is unhappily too true. But such cases are *so extremely rare*, that it is only within a few years that their occurrence has been clearly proved; many such cases having been charged upon Vaccination, in which careful enquiry has shown that the disease existed previously.

Dr. Balfour (formerly Surgeon-General in the Army) was able in 1870 to refer to above *a hundred and fifty thousand* adult vaccinations and re-vaccinations performed on the soldiers and recruits of Her Majesty's service; and *in no one* of these cases was there the least evidence of the communication of any kind of constitutional disease by Vaccination.—This testimony is particularly important, as all the persons so vaccinated remain under strict medical observation.

Mr. Tomkins, of the National Vaccine Establishment, wrote, about the same date, that after an experience of thirty years as a Vaccinating Surgeon, and having himself vaccinated *fifty thousand* children, he had never known any constitutional disease to be developed by the operation.

It may be stated as near the truth, that about *sixteen millions* of children have been vaccinated up to the end of 1879, since Vaccination was made compulsory. If its consequences had been so direful as the Anti-vaccinationists allege, we should have heard a great deal more of them. The cases in which the evidence of the communication of disease has been satisfactory may still be numbered by *tens*.

Now that Vaccinators are fully aware (which they previously were not) of the importance of only propagating Cowpox from the very healthiest children, it may be confidently expected that they will not again occur.—Do we abstain from drinking water, because it is sometimes poisoned by lead; or from making use of chloroform, because in very rare cases its administration proves fatal? What we do, is to take all the care we can to ensure the purity of our water-supply; and, if we have occasion to use chloroform for the avoidance of suffering, to have it administered by the most skilful hands.

So, to go back to my former illustration, if safety from Smallpox were to be obtained by making use of a protective herb, would it be a sufficient reason to refrain from eating this, that in one case out of 500,000 injury has accrued from some poisonous plant having been gathered with it, which due caution on the part of the gatherer would have kept out? What we should rather do, would be to enforce that caution by visiting the neglect of it with severe penalties; and I make no doubt that we should then hear no more of its sad results.

The Belgian Government now maintains an establishment for providing a constant supply of *calf*-lymph, which may be used with entire safety; and a private supply of the same kind is now obtainable in London. The objection to its use seems to be, that Cowpox is not as readily communicated from the Animal to the Human subject, as it is from one child to another, so that the Vaccination does not 'take' in a large proportion of children vaccinated with calf-lymph. But even occasional recourse to the animal-supply may save us from any reasonable chance of mischief from the propagation of Cowpox through unhealthy children.

It will be a great source of satisfaction to me, if, by the foregoing expression of the convictions which I have been led by careful scientific enquiry to form on this important subject, I may succeed in removing any opposition to what I honestly believe to be the beneficent Law which makes Vaccination compulsory.

WILLIAM B. CARPENTER.